Stabilization of free radicals in ...

1:2:2:2:1 occurring at -150°C changed into the quadruplet 1:3:3:1 at -90°C. This is explained by defrosting of the CH_2 groups in the $RCH_2C^{\cdot}HOH$ radical, with both β-hydrogen atoms becoming equivalent. Thus, a spectrum results that is characteristic of the interaction of the unpaired electron with three equivalent H atoms. The matrix method described will be further studied. It is to be applied to other types of organic radicals, thus determining the limit concentration of free radicals. I. N. Blazhevich is thanked for cooperation and Yu. N. Molin for discussion. There are 3 figures and 12 references: 4 Soviet and 8 non-Soviet. The four most recent references to English-language publications read as follows: Ref. 1: The Formation and Trapping of Free Radicals, Ed. by A. M. Bass and H. P. Broida, N. Y., 1960; Ref. 3: Stabilization of Free Radicals at Low Temperatures, Ed. by A. M. Bass and H. P. Broida, NBS Monograph, 12, 1960, p. 95; Ref. 11: R. S. Alger, T. H. Anderson, L. A. Webb, Bull. Am. Phys. Soc., 5; 156 (1960); Ref. 9: E. L. Cochran, F. J. Adrian, V. A. Bowers, J. Chem. Phys., 34, 1161 (1961).

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR)

32318
S/020/61/141/005/012/018
B101/B144

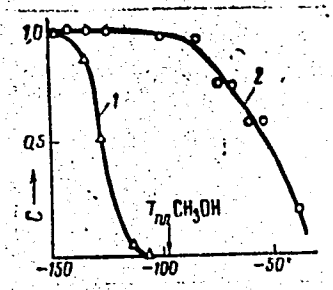
Stabilization of free radicals in ...

PRESENTED: July 13, 1961, by V. N. Kondrat'yev, Academician

SUBMITTED: June 27, 1961

Fig. 2. Change of concentration C of the radical $C^{\cdot}H_2OH$ (in relative units) with rising temperature. (1) in frozen CH_3OH; (2) in $MgCl_2 \cdot 6CH_3OH$; $T_{пл.}$ = melting point.

Fig. 2



Card 4/4

S/844/62/000/000/D2?/
D204/D307

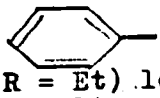
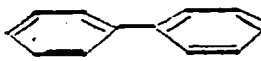
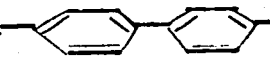
AUTHORS: Molin, Yu. N., Chhkeidze, I. I., Buben, N. Ya. and Voyevodskiy, V. V.

TITLE: A study of the transfer of energy to aromatic groups during the radiolysis of some organic compounds, by the EPR method

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 326-330

TEXT: The present work is a continuation of an earlier study in which the energy transfers in compounds of type A - D (where A is an aromatic and D an irradiation-unstable substituent) were investigated, D and A behaving respectively as donors and acceptors of energy, to allow a quantitative assessment of such energy transfers. The ЭПР-2 (EPR-2) apparatus was used, under a beam of 1.6 Mev electrons, the rate of irradiation being 0.03 - 0.3 Mrads/sec. The production of radicals (at 90 - 160°K) increased linearly with increasing doses of irradiation, up to a concentration of ~10^{20} per

A study of the transfer ...

The radiation yields of radicals, G, were similar in saturated hydrocarbons, as well as in those containing multiple bonds, and were of the order of a few per 100 ev of absorbed energy; they were lower (by a factor of $10^1 - 10^2$) in unsubstituted aromatics than in saturated hydrocarbons and, in aromatic compounds, decreased up to a point with increasing degree of conjugation. In (A-D)-type compounds (I)  R, where R = Me, Et, cyclohexyl, G_{AD} was 0.1 - 1, showing that at D $\rightarrow$ A transfer of energy took place with a probability (α) of 65 - 95%. Energy transfers in (I) and in compounds (II)  $(CH_2)_nSiR_3$ (where n = 0, 1, 2, 3 for R = Me and 0.3 for R = Et) led in most cases to the predominance, in the EPR spectra, of lines corresponding to a primary C-H fission in the benzene ring. In compounds (III)  R and R  R', the EPR spectra were more complex and, with long-chain substituents, lines corresponding to bond fission in the latter began to predo-

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A study of the transfer ... S/844/62/000/000/055/129
D204/D307

minate. The results are discussed, showing that D → A energy transfers occur in all 3 classes of compounds, with high values of α. The assistance of G. K. Voronova and of Ye. D. Kaplan, Ye. A. Chernyshev and V. F. Mironova, members of the Institut organicheskoy khimii AN SSSR (Institute of Organic Chemistry, AS USSR), is acknowledged. There are 2 figures and 2 tables.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, AS USSR); Institut khimicheskoy kinetiki i goreniya SO AN SSSR (Institute of Chemical Kinetics and Combustion, Siberian Branch of the AS USSR)

Card 3/3

43236
S/844/62/000/000/056/129
D204/D307

5.3300
11.1510

AUTHORS: Yermolayev, V. K., Molin, Yu. N. and Buben, N. Ya.

TITLE: Recombination of radicals in some frozen organic compounds

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 331-334

TEXT: The present work was aimed at a study of the molecular motions occurring during the recombination of radicals formed under the action of fast electrons at a temperature T_o, such that n_o, the number of radicals formed, remains fairly constant over 10 - 15 min. The compounds were then warmed up to a series of temperatures T_i (where $T_i > T_o$), maintained at T_i for 2 min and cooled back to T_o, at which temperature the remaining concentrations of radicals, n_i, were measured. In cystalline compounds, such as MeOH, C_6H_6 or n-octanol, the radicals disappeared at 0.9 - 1.0 T_m (where T_m =

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Recombination of radicals. ...

m.p.), whilst in poorly crystallizing substances, such as glycerol or n-butanol, the recombination took place in the region of vitrification (0.6 - 0.7 T_m). This rule was confirmed on slowly frozen (crystalline) and quenched (amorphous) 1,1-dicyclohexyldodecane; cooling at an intermediate rate gave rise to (n_i/n_o) versus $(\frac{T}{T_m})$ plots of an intermediate character, showing the presence of crystallites of varying temperature stability. Such intermediate type curves were the only ones observed for paraffin, polyethylene and polypropylene. The recombination is connected with partial destruction of the lattice and amorphous compounds respectively. In cyclopentane and cyclohexane, in which molecular rotation begins at T_{rot} ($T_{rot} \ll T_m$), it was found that recombination of the radicals took place at T_{rot}, showing that the radicals are probably formed in pairs and recombine as soon as rotation becomes possible. The assistance of V. V. Voyevodskiy and G. K. Voronova is acknowledged. There are 4 figures.

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Recombination of radicals ... S/844/62/000/000/056/129
D204/D307

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, AS USSR); Institut khimicheskoy kinetiki i goreniya SO AN SSSR (Institute of Chemical Kinetics and Combustion, Siberian Branch of the AS USSR)

Card 3/3

15.2622

43242
S/844/62/000/000/091/129
D204/D307

AUTHORS: Slovokhotova, N. A., Koritskiy, A. T., Buben, N. Ya., Bibikov, V. V. and Rudnaya, G. V.

TITLE: The action of fast electrons on polyethylene at low temperatures

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 531-535

TEXT: The aim of this work was to determine whether the double bonds found in irradiated polyethylene (PE) form directly during irradiation, or whether they arise from secondary radical interactions. Low- and high-pressure PE was irradiated with 1.6 Mev electrons, in liquid or gaseous N_2, and the specimens were examined by ir spectroscopy. Trans-vinylene-type bonds formed when high-pressure PE was irradiated with a dose of 206 Mrad (966 cm^{-1} band), both at -196 and +50°C, with similar energy yields, showing that

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such double bonds form by direct interaction of PE with the electrons. In liquid N_2 irradiation of the same PE with 200 Mrad also increased the proportion of vinyl-type bonds (909 cm^{-1} band), by a factor of 6 in relation to unirradiated PE. The proportion of vinyl bonds in low-pressure PE decreased for doses up to 25 Mrad, and then increased; the development of unsaturation was less pronounced at higher temperatures, Such bonds are both formed (directly) and destroyed in irradiated PE. The destructive process predominates at higher temperatures owing partly to the increased mobility of polymeric chains, but it is also connected with energy transfer processes during irradiation. Both types of PE exhibited a 985 cm^{-1} band when irradiated with doses of 300 Mrad, in liquid N_2, and after warming up to 26, 50 and 120°C over a period of 5 minutes. This band indicates the appearance of conjugated double bonds. The 944 cm^{-1} band, corresponding to allyl radicals, was also observed. This band was only stable below -100°C in high pressure PE and disappeared rapidly on warming to 50°C; in low-pressure PE

the same band was stable up to 100°C. This difference is explained by the higher crystallinity of low-pressure PE. Additions of benzene or toluene considerably reduced the intensity of this band, owing to the participation of additive molecules in energy transfer processes; the same lowering effect was observed with respect to the conjugated double bonds. There are 4 figures.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR; Fiziko-khimicheskiy institut im. L. Ya. Karpova (Institute of Chemical Physics, AS USSR; Physico-Chemical Institute im. L. Ya. Karpov)

Card 3/3

S/844/62/000/000/092/129
D204/D307

AUTHORS: Nikol'skiy, V. G. and Buben, N. Ya.

TITLE: Radiothermoluminescence of organic compounds

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 536-539

TEXT: The dependence of the position of maxima (T_M) on luminescence curves or irradiated high-pressure polyethylene (PE) and paraffin was studied in relation to (1) the degree of cross-linking in PE, (2) the rate of warming up and (3) the dose of irradiation, following earlier work (DAN SSSR, 134, 134 (1960)), in which it was shown that several organic compounds exhibited maxima on their luminescence curves in temperature regions where the molecules recovered their mobility, partially or totally. (1) The specimens were irradiated with fast electrons at 100°K with doses of 1 - 100 Mrad, were then warmed up to 293°K, cooled again to 100°K and re-irradiated with a dose of 0.5 Mrad. The value of T_M for PE became

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higher at higher initial doses of irradiation (i.e. for more highly cross-linked specimens), up to ~-32°C at 50 - 100 Mrad. The temperature of vitrification is thus raised by cross-linking. No such effect was observed with polyisobutylene. (2) For both PE and paraffin, T_M was found to be given by

$$1/T_M = C_1 - C_2 \log \omega \qquad (2)$$

where C_1 and C_2 are constants such that C_2 0.03 C_1, and ω is the rate of warming up, which in these tests was varied between 2 and 60 deg/min. The constant $C_2 = 2.3\ k/U_o$, where k is Boltzmann's constant and U_o is the activation energy for vitrification. The ratio C_2/C_1 was actually found to be 0.08 for paraffin, 0.028 for PE and 0.033 for PE cross-linked by a dose of 100 Mrad. The corresponding U_o's were respectively 13 ± 1, 29 ± 2 and 36 ± 2 kcal/mole. (3)

Radiothermoluminescence of ... S/844/62/000/000/092/129
D204/D307

In studying the position of T_M in dependence of the dose of irradiation, it was found that T_M decreased (almost linearly) with increasing dose, e.g. from $\sim -43^{\circ}C$ at 0 to $\sim -81^{\circ}C$ at 70 Mrad. The polymer was plasticized by its own products of radiolysis; it was confirmed that the amount of plasticizer, at the temperature of structural transition, was lowered by decreasing the rate of warming up. There are 4 figures and 1 table.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR (Institute of Chemical Physics, AS USSR)

Card 3/3

S/844/62/000/000/093/129
D204/D307

AUTHORS: Buben, N. Ya., Koritskiy, A. T. and Shamshev, V. N.

TITLE: The effects of additives on the low-temperature radiolysis of polyethylene (PE)

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 540-546

TEXT: The kinetics of free radical formation in high-pressure PE (by itself or with additions of CCl_4 or benzene) irradiated with fast electrons, were studied by EPR spectroscopy, using methods described earlier (Pribory i tekhnika eksperimenta, no. 6, 73 (1960); Vysokomolekularnyye soyedineniya, 1, 1182 (1959)). At -170°C, with 5% additions and doses of 0.25 - 7 Mrad, signals were detected from radicals forming from CCl_4 molecules, which were superimposed on the usual spectrum of irradiated PE and which rapidly disappeared at -60°C; no such signals were again detected when the specimens were warmed up to 30°C, cooled and re-irradiated, showing that the radio-

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The effects of ...

lysis products of CCl_4 are lost to the system or combine with the PE. Similar phenomena were observed in PE containing 10% of C_6H_6. At -125°C, ~10% addition of C_6H_6 lowered the initial energy yield (G) by 30 - 40% (for doses up to ~30 Mrad), but lowered G only slightly at higher doses (up to ~270 Mrad). A 1.5% addition of CCl_4 did not initially affect G, but led to a rapid slowing down of the rate of radiolysis at doses of 50 - 100 Mrad. This was particularly noticeable when the amount of CCl_4 was raised to 9%. The rates of radical accumulation in PE (pure and with 9% C_6H_6) become lower when the temperature was raised from -150 to -67°C, but only at doses exceeding 5 Mrad. The presence of CCl_4 led, however, to a considerable decrease in the rate of radical accumulation when the temperature was raised. The radiolysis products of CCl_4 are $\dot{C}Cl_3$ and Cl (atom or ion); the quantity $G_{\dot{C}Cl_3}$ is estimated to be ~100 times greater in PE/CCl_4 than in pure CCl_4, at -150°C. The Cl is

BUADZE, V.I.

Conditions governing the formation of the Khudesskoye copper-pyrite deposit. Geol. sbor. [Kavk.] no.2:43-80 '62.
(MIRA 17:1)

BUADZE, V.I. [redacted], [redacted].

(21)

S/011/63/000/001/002/002
A006/A101

AUTHOR: Azizbekov, Sh. A.

TITLE: The Third All-Union Conference on regularities in the formation and distribution of endogenous mineral resource deposits

PERIODICAL: Izvestiya Akademii nauk SSSR, Seriya geologicheskaya, no. 1, 1963, 126 - 128

TEXT: The Conference was held in Baku from September 18 to 23, 1962; it was attended by 455 representatives from scientific and industrial geological organizations including 24 Academicians and Corresponding Members of AS USSR and AS of various republic, 49 Doctors-Professors and 164 Candidates of Geological and Mineralogical Sciences. The Conference was opened by Academician D. I. Shcherbakov, secretary of OGGN, AS USSR. The program of the Conference was divided into three main groups: a) regularities in the formation and distribution of endogenous deposits in the Caucasus; b) regularities in the formation and distribution of endogenous deposits of other folding regions of the Alpine cycle; c) general problems of metallogeny. In group a) reports on basic features

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S/011/63/000/001/002/002
A006/A101

of metallogeny and models of detailed metallogenic charts of the Caucasus were delivered by Sh. A. Azizbekov and R. N. Abdullayev (in Azerbaydzhan), S. S. Mkrtychyan (in Armenia), G. A. Tvalchrelidze and Yu. I. Nazarov (in Georgia) and V. I. Orobey (in the Northern Caucasus); V. I. Smirnov reported on peculiarities in magmatism and metallogeny of the geosyncline and plateau stage in the evolution of the Western section of Northern Caucasus. Reports were delivered on magmatism and metallogeny in the Dashkesan ore region (M. A. Kashkay, M. A. Mustafabeyli) Southern Georgia (V. R. Nadiradze) the Sevan-Akera zone (S. M. Suleymanov) the Allaverdy-Bolina ore region (T. Sh. Gogishvili) and in the small Caucasian intrusives. G. S. Dzotsenidze reported on "Paleogenous volcanism in the Caucasus and metallogeny related to it"; V. N. Kotlyar on "Deposit types related to paleovolcanism"; papers were delivered on pyrite deposits in the Somkhito-Karabakh and the Sevan-Akera zone (P. F. Sopko); Northern Caucasus (N. S. Skripchenko, V. I. Buadze) the Chubukhlu-Tanzutsk ore region (S. Sh. Sarkisyan). Reports were read on polymetalic deposits in Northern Caucasus (A. M. Krasnovidova), North-West Caucasus (G. P. Kornev) and the Mekhmany ore field (N. V. Zaytseva). Other reports dealt with gold (N. Ye. Oukhman, D. G. Saliya) mercury (D. V. Abuyev) and rare metal (F. V. Mustafabeyli) mineralisation. Group 2 included reports on

Card 2/4

BUADZE, V.I.

Characteristics of the manifestation of pyrite mineralization in the volcanic formations of the Northern Caucasus. Zakonom.razm.polezn iskop. 7:360-362 '64. (MIRA 17:6)

1. Kavkazskiy institut mineral'nogo syr'ya.

BUADZE, V.I.

Ferruginous quartzites and sulfide-hematite ores of breccialike structure in the Khudat chalcopyrite deposit (Northern Caucasus). Izv. vys. ucheb. zav.; geol. i razv. 7 no.1:62-71 Ja '64 (MIRA 18:2)

1. Kavkazskiy institut mineral'nogo syr'ya.

TVALCHRELIDZE, G.A.; BUADZE, V.I.

Genesis of sulfide ore deposits in the Caucasus. Sov. geol. 7 no.10:27-38 O '64. (MIRA 17:11)

1. Kavkazskiy institut mineral'nogo syr'ya.

KUZNETSOV, G.F., doktor tekhn. nauk, prof.; SPIVAK, N.Ya., kand. tekhn. nauk. Prinimali uchastiye: BAULIN, D.K., inzh.; KREYTAN,V.G., inzh.; BUADZE,V.Sh., inzh.; KONTRIDZE, M.D., inzh.; USOV,A.L., inzh.; BADZHAGYAN, V.S.; KLIMOVA, G.D., red. izd-va; ABRAMOVA, V.M., tekhn. red.

[Instructions for designing and manufacturing large lightweight slabs to go between stories of apartment houses and public buildings] Ukazaniia po proektirovaniiu i izgotovleniiu oblegchennykh krupnopanel'nykh mezhduetazhnykh perekrytii zhilykh i obshchestvennykh zdanii. Moskva, Gos.izd-vo lit-ry po stroit., arkhit.i stroit.materialam, 1961. 109 p. (MIRA 14:12)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut stroitel'noy i ograzhdayushchikh konstruktsiy. 2. Deystvitel'nyy chlen Akademii stroitel'stva i arkhitektury SSSR (for Kuznetsov).

(Precast concrete construction)

NIKOL'SKIY, V.N., kand. tekhn. nauk; SPIVAK, N.Ya., kand. tekhn. nauk; BAULIN, D.K., inzh.; BUADZE, V.Sh., inzh.; KREYTAN, V.G., kand. tekhn. nauk; PERMYAKOV, S.I., kand. tekhn. nauk; USOV, A.L., inzh.; KOSHKIN, V.G., kand. tekhn. nauk; MARAVIN, B.L., inzh.; ERENBURG, A.I., inzh.; KOCHESHKOV, V.G., inzh.; RUBANENKO, B.R., glav. red.; ROZANOV, N.P., zam. glav. red.; ONUFRIYEV, I.A., red.; YUDIN, Ye.Ya., red.; NASONOV, V.N., red.; ISIDOROV, V.V., red.; MAKARICHEV, V.V., red.; FINKINSHTEYN, B.A., inzh. red.;

[Prefabricated floor and ceiling structures] Poly i perekrytiia industrial'noi konstruktsii. Moskva, Gosstroiizdat, 1963. 71 p. (MIRA 16:12).

1. Akademiya stroitel'stva i arkhitektury SSSR. TSentral'nyy nauchno-issledovatel'skiy i eksperimental'no-proyektnyy institut industrial'nykh zhilykh i massovykh kul'turno-bogatykh zdaniy. 2. Nauchno-issledovatel'skiy institut stroitel'noy fiziki i ograzhdayushchikh konstruktsii (for Nikol'skiy, Usov). 3. TSentral'nyy nauchno-issledovatel'skiy i eksperimental'no-proyektnyy institut industrial'nykh zhilykh i massovykh kul'turno-bogatykh zdaniy (for Buadze, Baulin, Spivak, Kreytan, Kocheshkov). 4. Vsesoyuznyy nauchno-issledovatel'skiy institut novykh stroitel'nykh materialov Akademii stroitel'stva i arkhitektury SSSR (for Erenburg).

(Floors) (Ceilings)

BUATO, P. [Boiteau, P.] (Frantsiya, Parizh); LISOVSKAYA, O.V. [translator]

Estrogenic activity of various feeds and its importance in zootechnics; from the work of the Laboratory of Nutrition at the Institut of Applied Research. Agrobiologiia no.1:92-100 Ja-F '63. (MIRA 16:5)

(Feeds) (Estrogens)

BUBAK, Z.

BUBAK, Z.

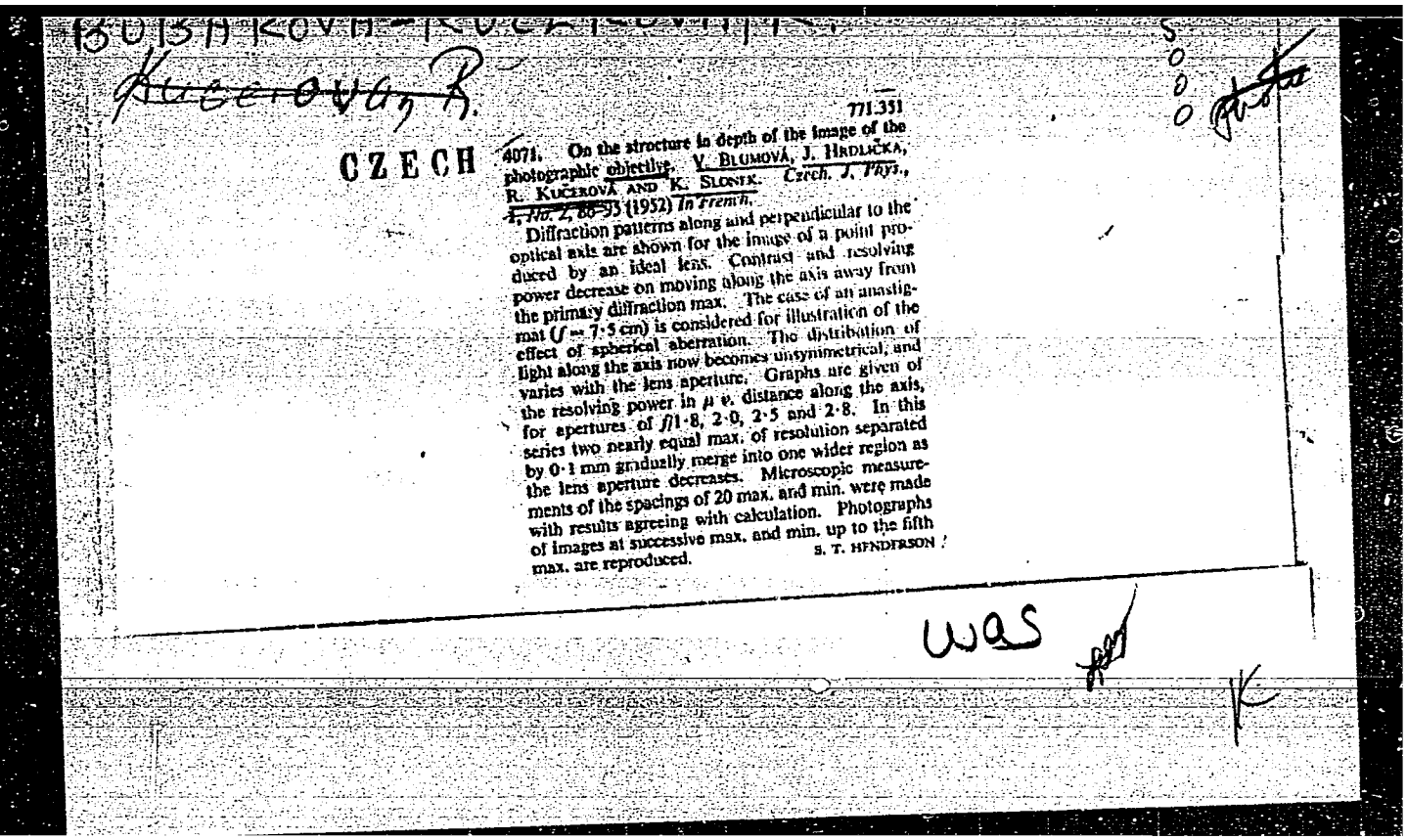
The forgotten glassworks in Juszczyn.

p. 71 (Wierchy) Vol. 25, 1956, Krakow, Poland

SO: MONTHLY INDEX OF EAST EUROPEAN ACCESSIONS (EEAI) LC, VOL. 7, NO. 1, JAN. 1958

BUAYE, Moris [Boye, Maurice]

In the effort for trade-union unity. Vsem. prof. dvizh. no.7/8: 38-39 Jl-Ag '63. (MIRA 16:10)



Kučerová, R.

CZECH

771.351

4071. On the structure in depth of the image of the photographic objective. V. BLUMOVÁ, J. HRDLIČKA, R. KUČEROVÁ AND K. SLOUK. *Czech. J. Phys.*, A, No. 2, 88–93 (1952) In French.

Diffraction patterns along and perpendicular to the optical axis are shown for the image of a point produced by an ideal lens. Contrast and resolving power decrease on moving along the axis away from the primary diffraction max. The case of an anastigmat (f = 7·5 cm) is considered for illustration of the effect of spherical aberration. The distribution of light along the axis now becomes unsymmetrical, and varies with the lens aperture. Graphs are given of the resolving power in μ v. distance along the axis, for apertures of f/1·8, 2·0, 2·5 and 2·8. In this series two nearly equal max. of resolution separated by 0·1 mm gradually merge into one wider region as the lens aperture decreases. Microscopic measurements of the spacings of 20 max. and min. were made with results agreeing with calculation. Photographs of images at successive max. and min. up to the fifth max. are reproduced.

S. T. HENDERSON

was

RUBAKOVA-KUCEROVA, K.

CZECH

535.8

4443. Centricity control of optical systems. R. Rubáková-Kučerová. *Czech. J. Phys.*, 1, No. 3-4, 201-4 (1952).

The existing method of controlling the centricity of optical systems in reflected light can be simplified by placing an auxiliary optical system having a short focal distance in front of the objective being tested. Reflections from all surfaces of the system under test can then be seen simultaneously in the field of the microscope and it can be recognized at first glance whether it is centric or not. A.

BUBAKOVA, R.

Structure of the absorption spectra of KCl and NaCl admixed with AgCl. p. 596.
(CESKOSLOVENSKY CASOPIS PRO FYSIKU, Vol. 6, No. 5, Sept 1956, Praha, Czechoslovakia)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, No. 12, Dec 1957. Uncl.

Bubakova Ruzena

CZECHOSLOVAKIA/Solid State Physics - Processes of Crystallization and E-8
Crystal Morphology

Abs Jour : Ref Zhur - Fizika, No 3, 1958, No 5965

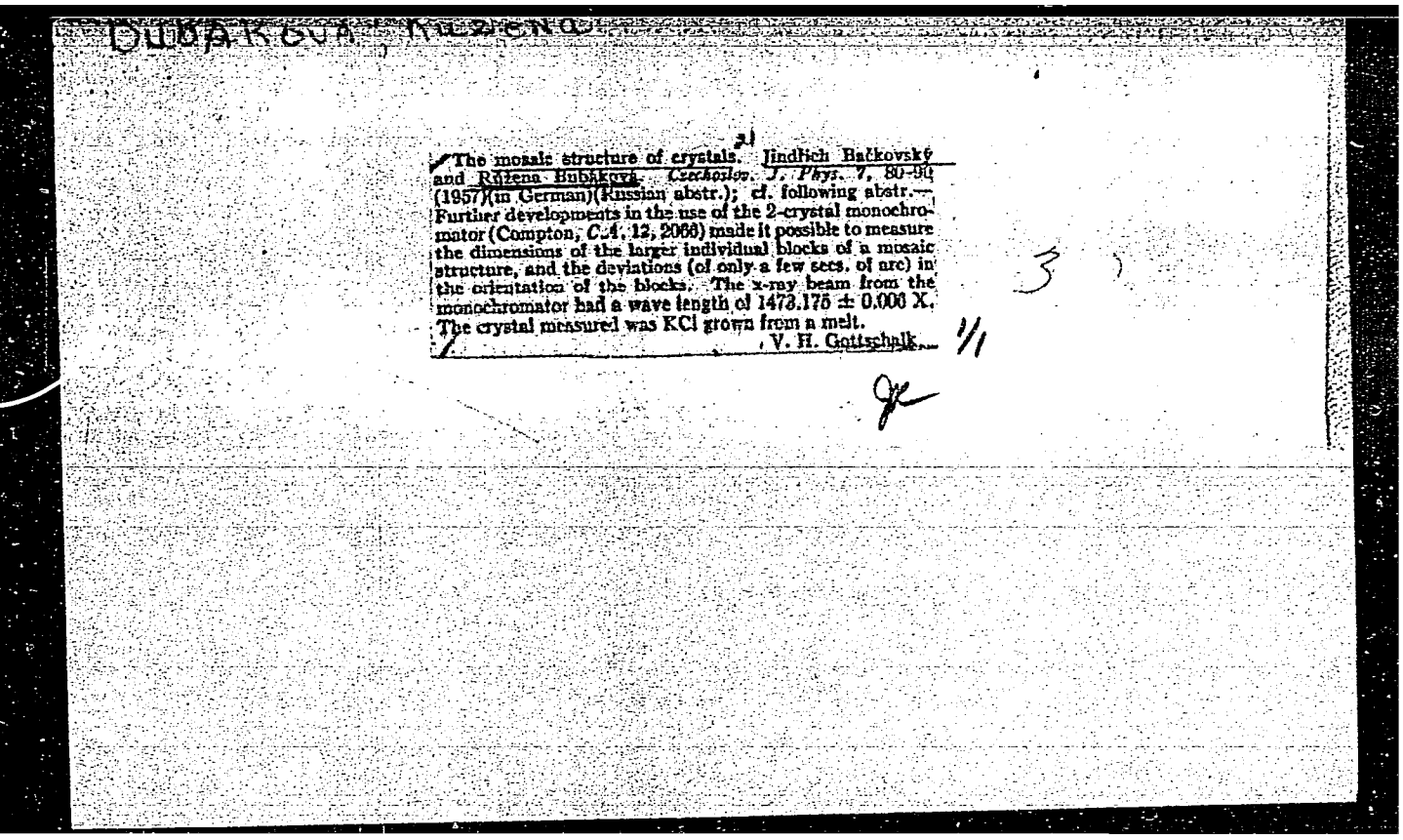
Author : Backovsky Jindrich, Bubakova Ruzena
Inst : Institute of Technical Physics, Czechoslovak Academy of Sciences, Prague, Czechoslovakia

Title : Study of the Mosaic Structure of Crystals

Orig Pub : Ceskosl. casop. fys., 1956, 6, No 6, 647-655; Chekhosl. fiz. zh., 1957, 7, No 1, 80-90

Abstract : To study the mosaic structure of crystals, the authors have employed a method, developed by them, of a three-crystal X-ray spectrometer. The use of two calcite crystals as a monochromator has made it possible to obtain a monochromatic beam of X-rays with a wavelength variation $\Delta\lambda = \pm 0.006$ X. In KCl crystals with a developed macromosaic structure it was possible to obtain resolution of the diffraction effects from the individual blocks. The measured half width of the diffraction effects from individual blocks is in satisfactory agreement with the value computed from the dynamic theory of the ideal crystal.

Card : 1/2



The mosaic structure of crystals. Jindřich Bačkovský and Růžena Bubáková. *Czechoslov. J. Phys.* 7, 80-90 (1957)(in German)(Russian abstr.); cf. following abstr.—Further developments in the use of the 2-crystal monochromator (Compton, *C.A.* 12, 2060) made it possible to measure the dimensions of the larger individual blocks of a mosaic structure, and the deviations (of only a few secs. of arc) in the orientation of the blocks. The x-ray beam from the monochromator had a wave length of 1473.175 ± 0.000 X. The crystal measured was KCl grown from a melt.

V. H. Gottschalk

1/1

BUBAKOVA R.

CZECHOSLOVAKIA/Electricity - Semiconductors G-3

Abs Jour : Ref Zhur - Fizika, No 2, 1958, No 3744

Author : Backovsky Jindrich, Bubakova Ruzena
Inst : Not Given
Title : Perfection of Germanium Crystals

Orig Pub : Ceskosl. casop. fys., 1957, 7, No 1, 110

Abstract : See Referat Zhur Fizika, 1958, No 1, 1365

Card : 1/1

BUBAKOVA R.

CZECHOSLOVAKIA/Electricity - Semiconductors G-3

Abs Jour : Ref Zhur - Fizika, No 1, 1958, 1365

Author : Backovskiy Jindrich, Bubakova, Ruzena

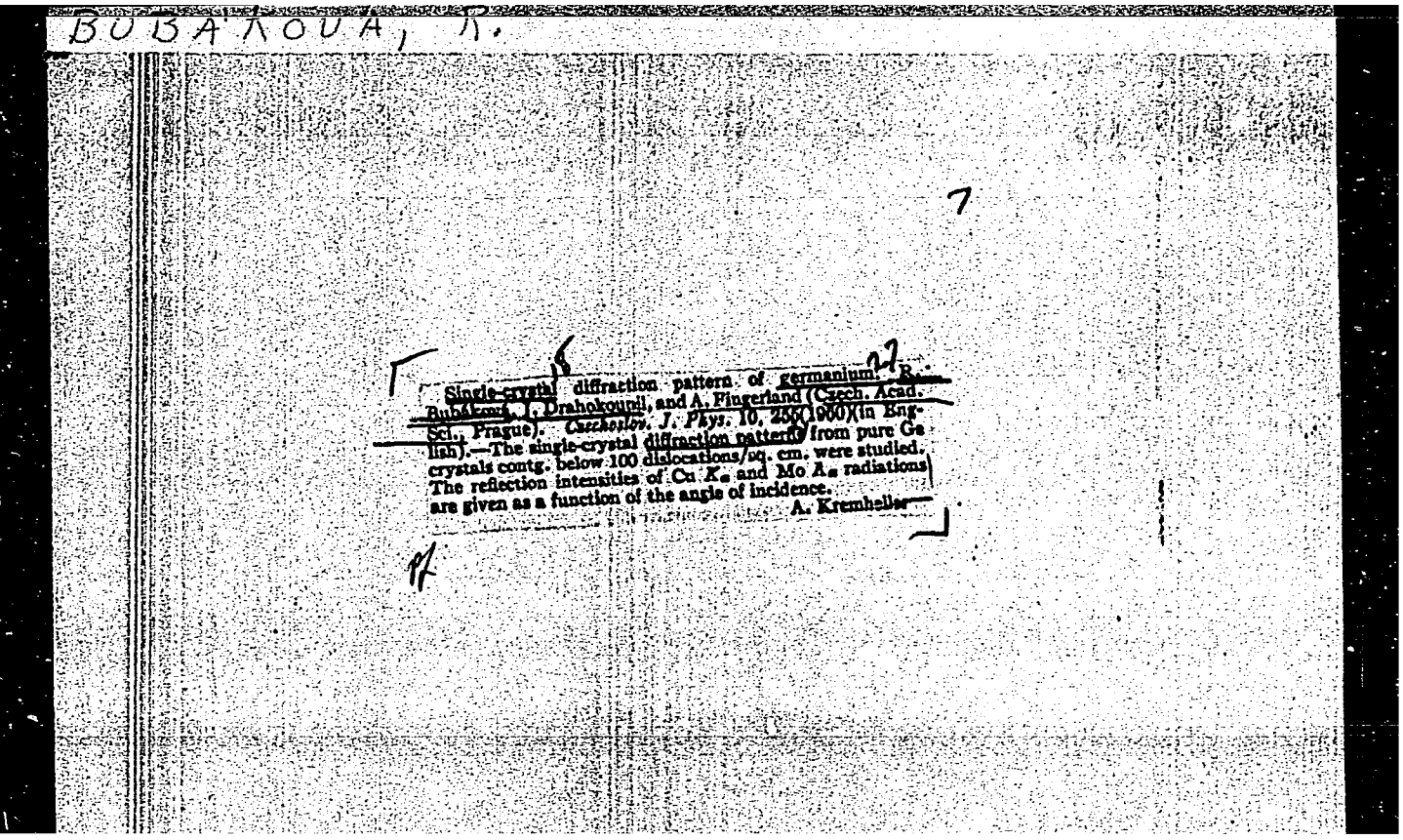
Inst : Institute of Technical Physics, Czechoslovak Academy of Sciences, Prague.

Title : Perfection of Germanium Crystals.

Orig Pub : Chekhosl. fiz. zh., 1957, 7, No 1, 124

Abstract : A method described in the work of one of the authors (Referat Zhur Fizika, 1957, No 9, 22569) was used to measure the course of the curve of scattering of X-rays by the planes (111) in germanium crystals, grown from a melt by drawing in vacuum. The initial material was purified by zonal melting. The specific resistivity of the specimen comprised 5.5 ohm/cm, the average carrier lifetime was ~ 25 microseconds. The width of the maximum

Card 1/2



BUBÁKOVÁ, R.

Single-crystal diffraction pattern of germanium. R. Bubáková, J. Drahokoupil, and A. Fingerland (Czech. Acad. Sci., Prague). *Czechoslov. J. Phys.* 10, 266(1960)(in English).—The single-crystal diffraction patterns from pure Ge crystals contg. below 100 dislocations/sq. cm. were studied. The reflection intensities of Cu K_α and Mo A_α radiations are given as a function of the angle of incidence.

A. Kremheller

L 23103-65 EWT(m)/EWP(b)/EWP(t) DIAAP/IJP(c) JD
ACCESSION NR: AP5003195 G/0030/65/008/001/0105/0114

AUTHOR: Bubakova, R.; Szmid, Z.

TITLE: Proton bombardment damage in silicon

SOURCE: Physica status solidi, v. 8, no. 1, 1965, 105-114

TOPIC TAGS: proton bombarded silicon, silicon lattice parameter, silicon crystal structure, proton bombarded silicon structure, proton bombarded silicon lattice

ABSTRACT: The aim of this investigation was to determine the effect of proton irradiation on the lattice parameters and crystal structure of Si. A monocrystal silicon plate about 10 mm thick was grown by spin-pulling in the [111] direction by the Chokhral'skiy method. The plate was ground and polished parallel to the [111] plane to an accuracy of ± 0.5°. The back surface of the sample was water-cooled. The face of the plate was half covered by a copper plate; the other half was exposed to a beam of 6.5-Mev protons. The dose was about 1 to 2 x 10^{18} protons/cm^2. The x-ray photographs of the bombarded face show an increase of the lattice parameter ($\Delta a \approx + 3 \times 10^{-5}$ Å) and a

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L 23103-65
ACCESSION NR: AP5003195

tilt (1.7") and band of the atomic planes with an effect somewhat similar to a dislocation edge. The angles between the normals of the atomic planes were determined from the intensity of the diffracted x-rays as a function of the angle around the vertical axis. A measurable deformation of the lattice planes and change of their distances was observed. The angle of the normals in the bombarded and unbombarded part was greatest in the plane perpendicular to the boundary between them, and smallest in the plane parallel to the boundary. The lattice parameter increased as a result of irradiation. Some defects were produced in the diamond-type structure as indicated by a diffraction from the (222) planes, which is absent in a perfect silicon structure. Orig. art. has: 7 figures and 2 tables. [FP]

ASSOCIATION: Institute of Solid State Physics, Czechoslovak Academy of Sciences, Prague; Institute of Nuclear Research, Warsaw.

SUBMITTED: 09Sep64 ENCL: 00 SUB CODE: SS, NP

NO REF SOV: 000 OTHER: 005 ATD PRESS: 3173

Card 2/2

CZ/4-60-3-39/44

AUTHORS: Berdych, Josef; Bůbal, J.

TITLE: Scientific-Technical Societies.

PERIODICAL: Nová Technika, 1960, No. 3, pp. 141 - 143

ABSTRACT: I. Various plant branches of the Čs. VTS do not make proper use of the "Technicko-ekonomické informace - TEI" (Technical-Economic Information). As an example for the correct utilization the author quotes the plant branch of the Presné strojírný ZVIL Plseň (Precision Mechanical Engineering Plants ZVIL Plseň) at Plseň; the technical and informational literature was distributed among the members of the Čs.VTS. The Technical Committee at the Kovochuté Bridličná (Bridličná) Metallurgical Plants) published the technical information as pamphlets. The "Zpravodaje pro TEI" (Reports for the TEI) contain data on new technical literature and information, innovations, improvements, documentation etc. Such reports have been prepared by the Stalinový závody (Stalin Works) at Záluži v Krušných horách. In the n.p. Silon (Silon, People's Enterprise) in Planá nad Lužnicí the plant branch of the Čs.VTS published the "Technické aktuality" (Technical Actualities). II. The plant branch of the Čs.VTS at the Precision Mechanical Engineering Plants ZVIL Plseň has been established on March 27, 1959; it has three branch groups, i.e. for rail cars, for machine tools, and for

cogwheels. The cooperation with the ZV (Plant Committee) of the ROH is close and various teams were established to solve technical and production problems . Lectures were given on the "Electrification of Railroads", "Technology of the Production of Electric Locomotives", etc. A Five-Point Program was prepared containing directives for improvement. III. The members of the plant branch of Čs.VTS at the Hranická cementárna (Cement Works at Hranice), which was established on July 30, 1959, solved the problems of dust separation at the plant and at the cement kiln No. 2. Additional problems of dust exhaustion should be solved at the rotary kilns, the cement mills etc. IV. The plant branch at the Výzkumný ústav lýkových vláken (Research Institute for Bast Fibers) at Šumperk was founded in May 1959. The members of the Čs. VTS assist in the work of the Rationalization Committee, they submitted various improvement suggestions etc. The cooperation with the Hedva Plant in Zábřeh secured the solution of a series of problems; among others new technological methods for the processing and testing of bast fibers were found, and proposals were submitted on the-automation and mechanization of production and onthe protection of fibers. V. A Section for Wood Industry of the Čs.VTS will be established, dealing with questions of woodworking, impregnation of wood, packaging etc.

CZ/4-60-5-33/35

AUTHORS: Bubal, J.; Holler, Milan, Engineer

TITLE: Scientific-Technical Societies

PERIODICAL: Nová Technika, 1960, No. 5, pp. 237 - 239

TEXT: 1) In the course of the March Meeting of the Předsednictvo Ústřední rady (Presidium of the Central Council) the activity of the Čs. vědecko-technická společnost (Czechoslovak Scientific-Technical Society) during 1959, i.e. during the first year of its union with the Revolučné odborové hnutí (Revolutionary Trade - Union Movement) was discussed and problems of innovations, competitions and technical improvements treated. The Čs.VTS has 1,600 plant branches. 2) The article deals with the activity of the Čs.VTS at the district of Olomouc and at the plant branch of Čs.VTS at the Oblastní inspektorát technického dozoru (District Inspectorate for Technical Supervision) at Olomouc. In January 1960 this plant branch organized a meeting with representatives of the Moravské železárni (Moravian Ironworks) and the Ministerstvo těžkého strojírenství (Ministry of Heavy Machine Building) on the planned construction of the new boiler house at the Moravian Ironworks and the use of the old boiler plant at the sugar factory of Hejčín. The new project will be

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cheaper by 17,500,000 Kčs. Then the article reports on construction problems of pressure vessels designed for magnesium inoculation of cast-iron at the Moravian Ironworks and the Železárný Petra Bezrouče (Peter Bezrouč Ironworks) at Olomouc; these questions were discussed in January 1960 as well as problems of the extension of the boiler plant at the n.p. Sigma (Sigma, People's Enterprise) in Lutnín by 4 box-type boilers of 135 m each. The respective plans were prepared by the Kovoprojekt Enterprise in Brno. 3) The article deals with organizational problems and the activity of the plant branch at the Třinecké železárny VŘSR (VŘSR Ironworks at Třinec). Engineer Rédl was charged by the chairman of the plant branch Engineer Wolf to prepare proposals on the improvement of blast heater technology. The plant branch of Čs.VTS at the nár. podnik Obal (Obal, People's Enterprise) at Teplice dealt with new packing methods and the plant branch at the Textilana Plant at Liberec with novelties in textile production. 4) This article deals with the activity of plant branches of Čs.VTS in constructional engineering, with organizational problems and with improvement of technical skill of members.

APPROVED FOR RELEASE: 06/09/2000 CIA-RDP86-00513R000307210007-1"

BUBAL, J.

Activities of the Czechoslovak Scientific Technical Society in 1961. Tech praca 14 no.6:459-460 Je '62.

1. Ustredni rada Ceskoslovenske vedecko-technicke spolecnosti.

STVERAK, Jiri; BUBAL, Jan

For further development of the initiative and competition of technicians. Tech praca 16 no.3:186-187 Mr '64.

1. Central Council of the Czechoslovak Scientific and Technological Society.

BUBAL, Jan

We are building Houses of Technology of the Czechoslovak Scientific and Technological Society. Tech praca 17 no.2: 136-137 F '65.

1. Central Council of the Czecholovak Scientific and Technological Society, Prague.

BUBANJ, Andelko, inz.

Scientific research in petroleum industry. Nafta Jug 13 no. 11/12: 298-303 N-D '62.

1. Institute of Petroleum, Zagreb.

BUBANJ, Andelko, inz.

Scientific research in petroleum industry. Nafta Jug 13 no.11/12:298-303 N-D '62.

1. Institut za naftu, Zagreb, glavni i odgovorni urednik, "Nafta".

BUBANJ, R.

Organization of psychiatric hospital at Wunstorf, Western Germany.
Neuropsihijatrija 3 no.3-4:274-276 1955.

1. Ravnatelj Ustanova Med. Fakulteta u Zagrebu.
(HOSPITALS, PSYCHIATRIC,
Wunstorf Hosp., West Germany, organiz. (Ser))

BUBANJ, R.

A brief survey on training of nurses in certain European countries. Radovi Med. fak. Zagrebu 2:178-196 1956.

1. Iz Ravnateljstva ustanova Medicinskog fakulteta u Zagrebu (ravnatelj: dr. R. Bubani).
(NURSING PROFESSION, education, in Europe (Ser))

BUBANJ, Remigij, Dr.

Finland and its health service. Lijec. vjes. 78 no.1-2: 66-74 1956.

(NATIONAL HEALTH PROGRAMS, in Finland (Ser))

BUBANJ, Remigije

Health services in Holland. Radovi Med. fak. Zagrebu 3: 315-329 1956.

1. Iz Ravnateljstva ustanova Medicinskog fakulteta u Zagrebu (ravnatelj: dr. Remigije Bubanj)
(PUBLIC HEALTH,
in Netherlands (Ser))

Bubekin, B

BUBEKIN, B.

Letatel'nyia mashiny; legche i tiazheliee vozdukha, ikh propellery i motory. Pod" red. N. E. Zhukovskago. Moskva, Nezhfakul'tetskaia izdatel'skaia komissiia studentov" Moskovskago univ., 1910. 55 p., illus.

Title tr.: Flying machines; lighter and heavier than air, their propellers and power plants.

TL600.B8

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

TISHCHENKO, I.G.; BUBEL', O.N.; ZYAT'KOV, I.P.

Oxides of some higher alkylidene acetones. Zhur. ob. khim. 33 no.8:2613-2617 Ag '63. (MIRA 16:11)

1. Belorusskiy gosudarstvennyy universitet imeni V.I. Lenina.

L 06301-67 EWT(d)/EWP(l) IJP(c) GG/BB/GD

ACC NR: AT6015369 SOURCE CODE: UR/0000/65/000/000/0159/0163

AUTHOR: Bubel, V. M.; Kosobutskiy, S. K. (Deceased)

43
B+1

ORG: none

TITLE: A punched card reader 16

SOURCE: AN BSSR. Institut tekhnicheskoy kibernetiki. Vychislitel'naya tekhnika (Computer engineering). Minsk, Nauka i tekhnika, 1965, 159-163

TOPIC TAGS: digital computer, computer technology, computer input unit, punched card / Minsk 1 computer

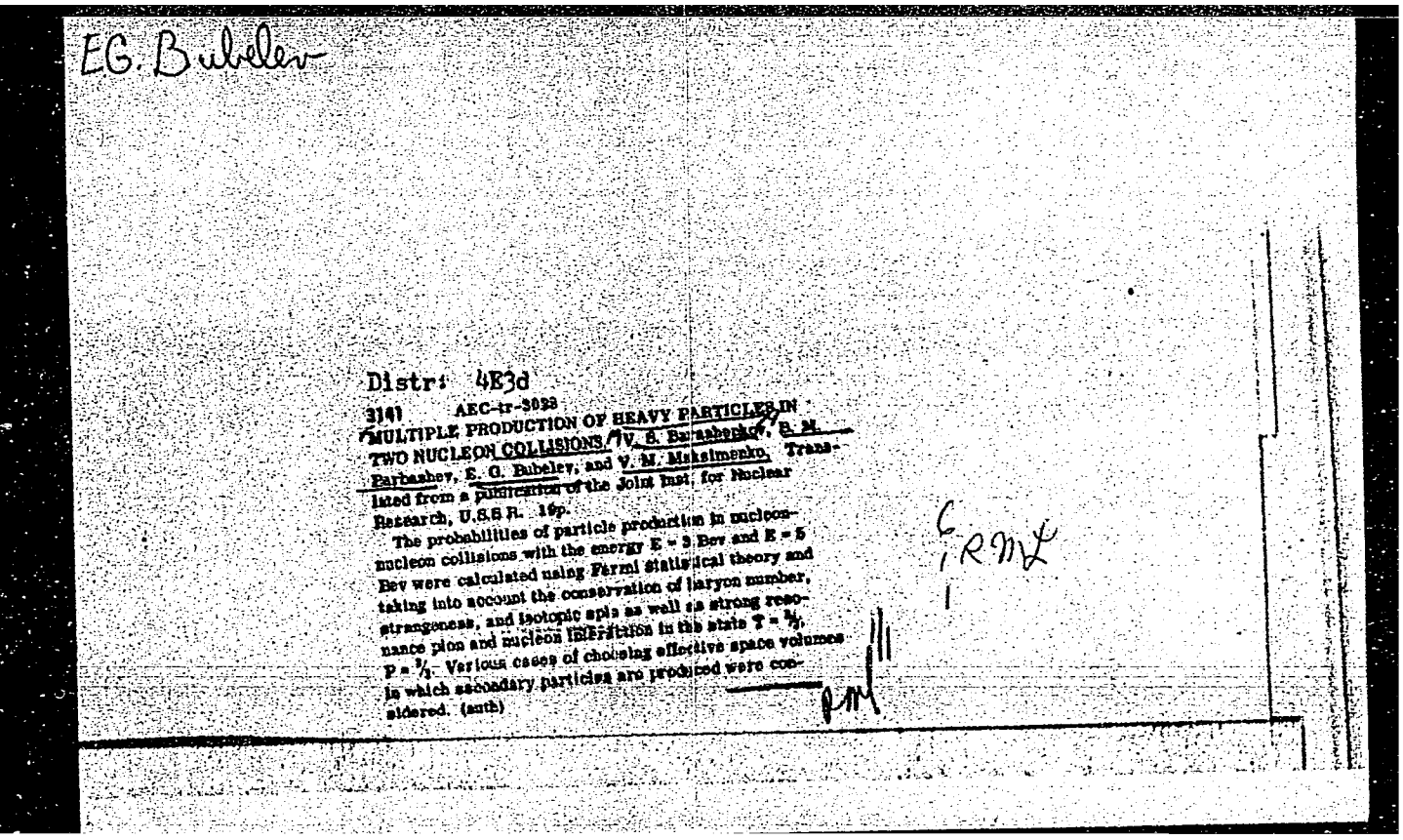
ABSTRACT: This paper deals with a new type of on-line punched card reader designed to feed data into the punched tape input terminal of the Minsk-1 computer. The card reader extends the capability of this computer by providing an additional means of input. Standard 45-column cards are used at a speed of 100 cards per minute. The information is read in a series-parallel mode. An internal decoder converts the decimal data into 8-4-2-1 BCD code, compatible with the particular input terminal of the computer. The computer generates appropriate control signals utilized in the control module of the reader. A signal is fed into the computer whenever a word begins or ends. For the serial output of the digits, a shift register is used consisting of transistor-ferrite core elements. A laboratory model was built and tested with satisfactory results. The unit is small, simple, and reliable. Orig. art. has: 3 figures.

SUB CODE: 09/ SUBM DATE: 15Dec65

Card 1/1 gl

BUBEL', Ye. G. (Zaporozh'ye)

Trenchless laying of heating networks. Vod. i san. tekh. no.12:26 D '59. (MIRA 13:3)
(Heating pipes)



E.G. Bubelev

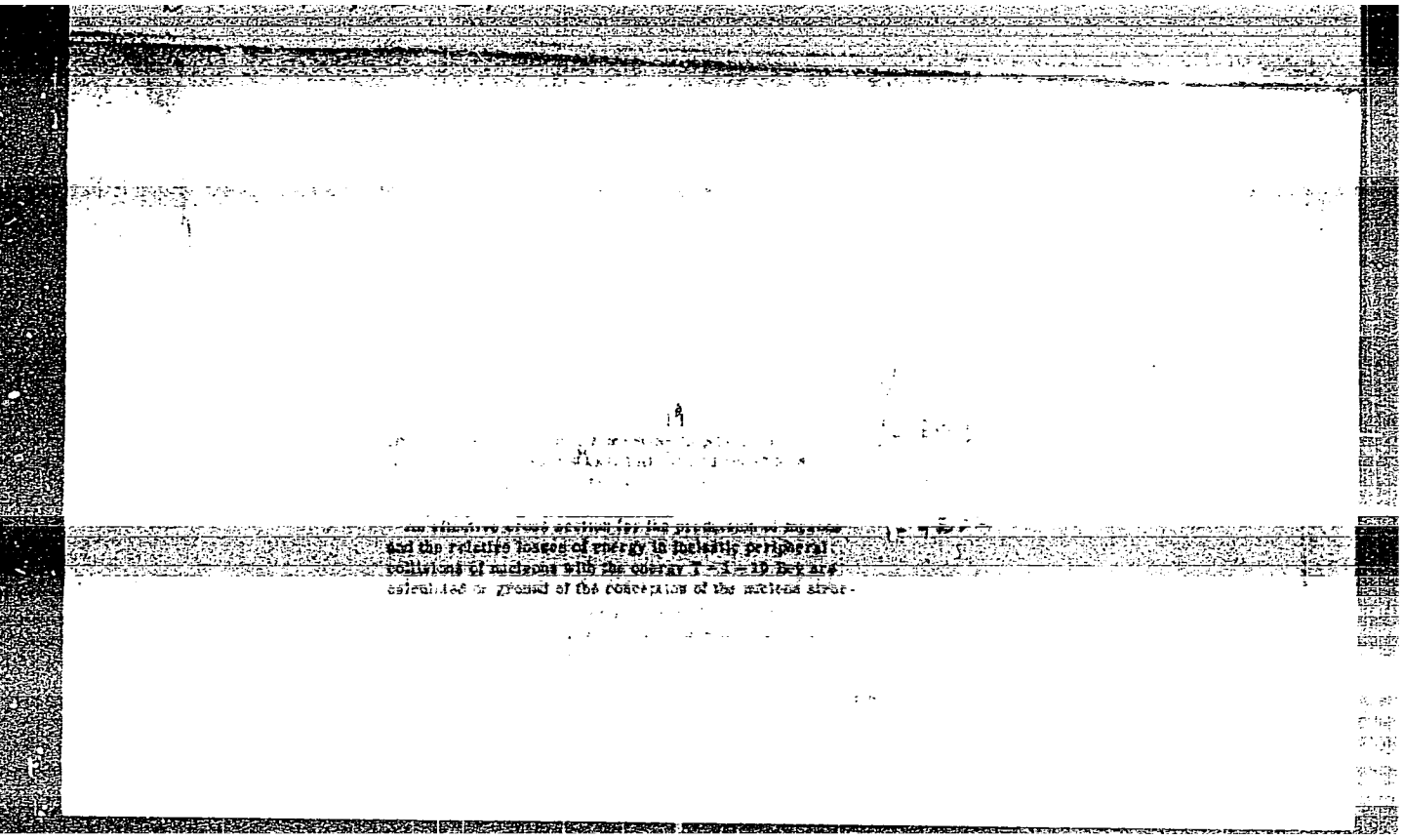
Distr: 4E3d

3141 AEC-tr-3038

MULTIPLE PRODUCTION OF HEAVY PARTICLES IN TWO NUCLEON COLLISIONS / V. S. Barashenkov, B. M. Barbashev, E. G. Bubelev, and V. M. Maksimenko. Translated from a publication of the Joint Inst. for Nuclear Research, U.S.S.R. 16p.

The probabilities of particle production in nucleon-nucleon collisions with the energy E = 3 Bev and E = 5 Bev were calculated using Fermi statistical theory and taking into account the conservation of baryon number, strangeness, and isotopic spin as well as strong resonance pion and nucleon interaction in the state $T = \frac{3}{2}$, $P = \frac{3}{2}$. Various cases of choosing effective space volumes in which secondary particles are produced were considered. (auth)

E, R M L



BUBELEV, E.G.

AUTHOR Bubelev, E.G. 56-2-37/47

TITLE On the Production of Mesons at the Collision of High Energy Nucleons.
(O rozhdenii mezonov pri stolknovenii nuklonov vysokikh energiy.)

PERIODICAL Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol. 33, Nr 2(8), pp. 539-540 (USSR)

ABSTRACT The present paper contains a detailed investigation of the peripherous collisions of nucleons. In this way the results obtained by Blokhintsev, Cern Symposium, Geneva, 1956 are precisely defined. Firstly, the contributions made by mesons with different charges are here taken into account. For the energy transferred from the π^0-shell of a fast nucleon a formula is written down. For the spectra of the pions accompanying a pion and a neutron respectively it holds that $Q^+ = Q^- = 2\ Q^0$. Next, expressions for the cross section of the production of mesons and for the relative energy losses of a fast nucleon at interation of the shell with the nucleus of the nucleon at rest ((π,K)- interaction) are given. Also the interaction of the nucleus of a fast nucleon with the shell of a nucleon at rest ((K,π)-interaction) is

CARD 1/2

56/2-37/47

On the Production of Mesons at the Collision of High Energy Nucleons.

taken into account here; in the rest system of the fast nucleon it represents a (π,K)-interaction with the cross section σ. As the here employed function of the meson field means the exchange of a pion between the nucleons in interaction, the cross sections of meson production of the two processes in question are added and the relative losses are averaged:

$\sigma = 2\sigma_1$, $\delta = (\delta_1/2)\left[1 + 1/2\,\gamma(1-\delta_1)\right]$. The best agreement with the experiment is obtained for the radius of the nucleon nucleus $r = \hbar/m_k c \approx 2\,\hbar/Mc$ and for the coupling constant $g^2 = 15$.
There is 1 figure.

ASSOCIATION: United Institute for Nuclear Research.
(Ob"yedinennyy institut yadernykh issledovaniy.)
SUBMITTED: May 17, 1957.
AVAILABLE: Library of Congress.

CARD 2/2

BUBELOV, E. G., BARASHENKOV, V. S., B. M. BARBASHEV, MAKSIMENKO, V. M.

"Multiple Production of Heavy Particles in Two Nucleon Collisions,"
Nuclear Physics, Vol. 5, No. 1, Jan '58 (North Holland Publ. Co, Amsterdam) p 17

Joint Inst. of Nuclear Research, Theoretical Physics Lab., Dubna, USSR - for BUBELOV, E. G, BARASHENKOV, V. S., and BARBASHEV, B. M.

Abst. - The probabilities of particle production in nucleon-nucleon collisions at an energy of E = 5 GeV have been calculated using Fermi's statistical theory and by taking into account the conservation of baryon number, strangeness, isobaric spin as well as strong resonance pion-nucleon interaction in the T = 3/2, P = 3/2 state. Various effective space volumes in which secondary particles are produced are considered.

BARASHENKOV, V. S., BELYAKOV, V. A., BUBELEV, E. G., WANG SHOU FENG, MALTSEV, V. M., TEN GYN, and TOLSTOV, K. D.

"Multiple Production of Particles in Collisions between 9 GeV Protons and Nucleons" Nuclear Physics, Vol. 9, No. 1, Nov 1958.

Joint Inst. Nuclear Research, Lab Theoretical Physics and High Energy Lab., Dubna USSR

Abst: Some theoretical calculations pertaining to multiple production of particles in nucleon-nucleon collisions at 7-10 GeV were presented in ref. 1. Some preliminary experimental results obtained by irradiating photographic emulsions with proton beam from the synchrocyclotron of the Joint Inst. Nuclear Research were given in ref. 2. In the present paper we compare the theoretical results of ref. 1 with the results of some new experiments. 372 stars, of which 50 were classified as proton-nucleon collisions, were recorded in NIKFI-R photographic emulsions along the tracks of $\approx$ 9GeV protons accelerated in the JINR proton synchrocyclotron. The mean number of charged particles created in these collisions was 3.6 ± 0.5. The angular distribution of fast charged particles is obtained. As a whole the experimnetal results agree with the statistical theory of multiple particle production within the limits of the experimental errors. Some discrepancy is evident in the small angle range and may be due to the contribution of non-central impacts and to asymmetry of the angular distribution in the c.m.s.

S/058/61/000/004/004/042
A001/A101

24.6900

AUTHOR: Bubelev, E.G.

TITLE: A model of multiple production of mesons with finite N-π and π-π-interaction

PERIODICAL: Referativnyy zhurnal Fizika, no 4, 1961, 90, abstract 4B313 ("Tr. Mezhdunar. konferentsii po kosmich. lucham, 1959, v 1", Moscow, AN SSSR, 1960, 284 - 288)

TEXT: The author proposes a model of multiple production of mesons resulting from the strong interaction-of mesonic fields of colliding nucleons. The presumption on the finiteness of this interaction makes it possible to explain from the single viewpoint two-center "jets" observed at $E_0 \gtrsim 10^{12}$ev and one-center ones observed at $E_0 \sim 10^{11}$ev.

/B

[Abstracter's note: Complete translation.]

Card 1/1

BUBELEV, E.G.

[Conformal mapping of a Lobachevskii plane on a Euclidean strip and its application to the kinematics of relativistic particles] Primenenie konformnogo otobrazheniia ploskosti Lobachevskogo na evklidovu polosu k kinematike reliativistskikh chastits. Dubna, Ob"edinennyi in-t iadernykh issledovanii, 1963. 30 p. (MIRA 16:11)
(Graphic methods) (Mesons) (Kinematics)

BUBELEV, E.G.; CHERNIKOV, N.A.

Graphic method in the kinematics of a reaction with a participating photon. Acta physica Pol 26 no.1:155-161 Jl '64.

1. Joint Institute of Nuclear Research, Laboratory of High Energies Laboratory of Theoretical Physics, Dubna, U.S.S.R.

BUBELEV, E.G.

Use of the conformal mapping of a Lobachevskii plane on a Euclidean strip in analyzing the multiple production of mesons. Izv. AN SSSR. Ser. fiz. 28 no.11:1829-1834 N '64. (MIRA 17:12)

1. Ob"yedinennyy institut yadernykh issledovaniy.

RUBLEV, B.S.

Use of a Lobachevskii velocity diagram in analyzing fluxes of high-energy particles. Izv. AN SSSR. Ser. fiz. 28 no.11:1835-1840 N '64. (MIRA 17:12)

1. Ob"yedinennyy institut yadernykh issledovaniy.

BUBELEV, Ye.G.

Application of conformal reflections of Lobachev planes on the Euclidean band in the kinematics of relativistic particles. Acta physica Pol 26 no.2:279-305 '64.

1. Joint Institute for Research, Laboratory of High Energies, Dubna.

BUBELKA, Ervin

New forms of work in technological development. Podn org 18 no.9: 426 S '64.

1. Bavlnarske zavody V.I. Lenina, Ruzomberok.

KHOKHLOVA, A., konstruktor; PONOMAREVA, T. [Panamarova, T.], master; BUBEN, Antonina [Buben, Antanina], kontroler; ZUYEVA, O., [Zuieva, Vol'ga Danilovna], master; KUR'YANOVA, Nina

We work at the tractor plant. Rab.i sial. 34 no.11:7-8 N '58. (MIRA 11:12)

1. Minskiy traktornyy zavod (for all). 2. Chugunnoliteynyy tsekh (for Ponomareva). 3. Traktornyy tsekh No.2 (for Buben, Kur'yanova). 4. Pressovyy tsekh (for Zuyeva).
(Minsk--Tractor industry) (Women--Employment)

BUBEN, E.M.

Manufacturing parts of buildings on the construction site. Transp. stroi. 11 no.5:29-30 My '61. (MIRA 14:6)

1. Instruktor peredovykh metodov truda Dnepropetrovskoy normativno-issledovatel'skoy stantsii Orgtransstroya.
(Precast concrete)

CZECHOSLOVAKIA/Chemical Technology. Chemical Products and Their Application. Pharmaceuticals. Vitamins. Antibiotics.

Abs Jour: Ref Zhur-Khim., No 2, 1959, 5760.

Author : Jancik, Fedir; Buben, Frantisek; Körbl, Jiri.
Inst :
Title : Oxidimetric Determination of Methionine.

Orig Pub: Ceskosl. farmac., 1956, 5, No 9, 515-516.

Abstract: Methionine (I) is determined in pure preparations by potentiometric titration with 0.1 N and 0.01 N $KBrO_3$ in the presence of KBr, as well as with 0.1 N ICl. Titration of I with 0.1 N $KBrO_3$ was carried out with weighed samples of 32.3 - 143.3 mg and with maximum divergences of -0.21 and +0.15%, same with 0.01 N $KBrO_3$ was carried out with weighed samples of 1.15 - 15.25 mg and errors from -0.46 to +0.87% (applicable to microdetermination).

Card : 1/2

Buben, Frantisek

E-2

CZECHOSLOVAKIA/Analytic Chemistry - Analysis of Inorganic Substances.

Acs Jour : Ref Zhur - Khimiya, No 10, 1958, 32161

Author : Frantisek Buben, Jiri Korbl, Rudolf Pribil

Inst :

Title : Complexometric Titration (Chelatometry). XXXI. Analysis of Calcium-Disodium Salt of Ethylenediaminetetraacetic Acid.

Orig Pub : Chem. listy, 1957, 51, No 7, 1307-1311

Abstract : A rapid complexometric method of determination of free and total Ca and complexone III (I) in the $Ca\text{-}Na_2$ salt of ethylenediaminetetraacetic acid (II) and pharmaceutical preparations was developed. The application of methylthymol blue (III) as an indicator in acid and alkaline media permits to determine all the components using one weighed sample. The sample to be analysed and containing 200 to 300 g of II is dissolved in 100 ml it

Card 1/3

25 s of solution

RUDAJEV, V.; BUBEN, J.

Network of seismic stations near Kladno. Vysl ban vyzk 3:77-95 '64.

1. Institute of Mining, Czechoslovak Academy of Sciences, Prague.

S/169/62/000/005/025/093
D228/D307

AUTHOR: Buben, Jiri

TITLE: Three-channel transistor magnetic sound-recorder for seismoacoustic measurements in shafts

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 5, 1962, 28, abstract 5A219 (Geofys. sb., no. 126-145, 1960 (1961), 473-480)

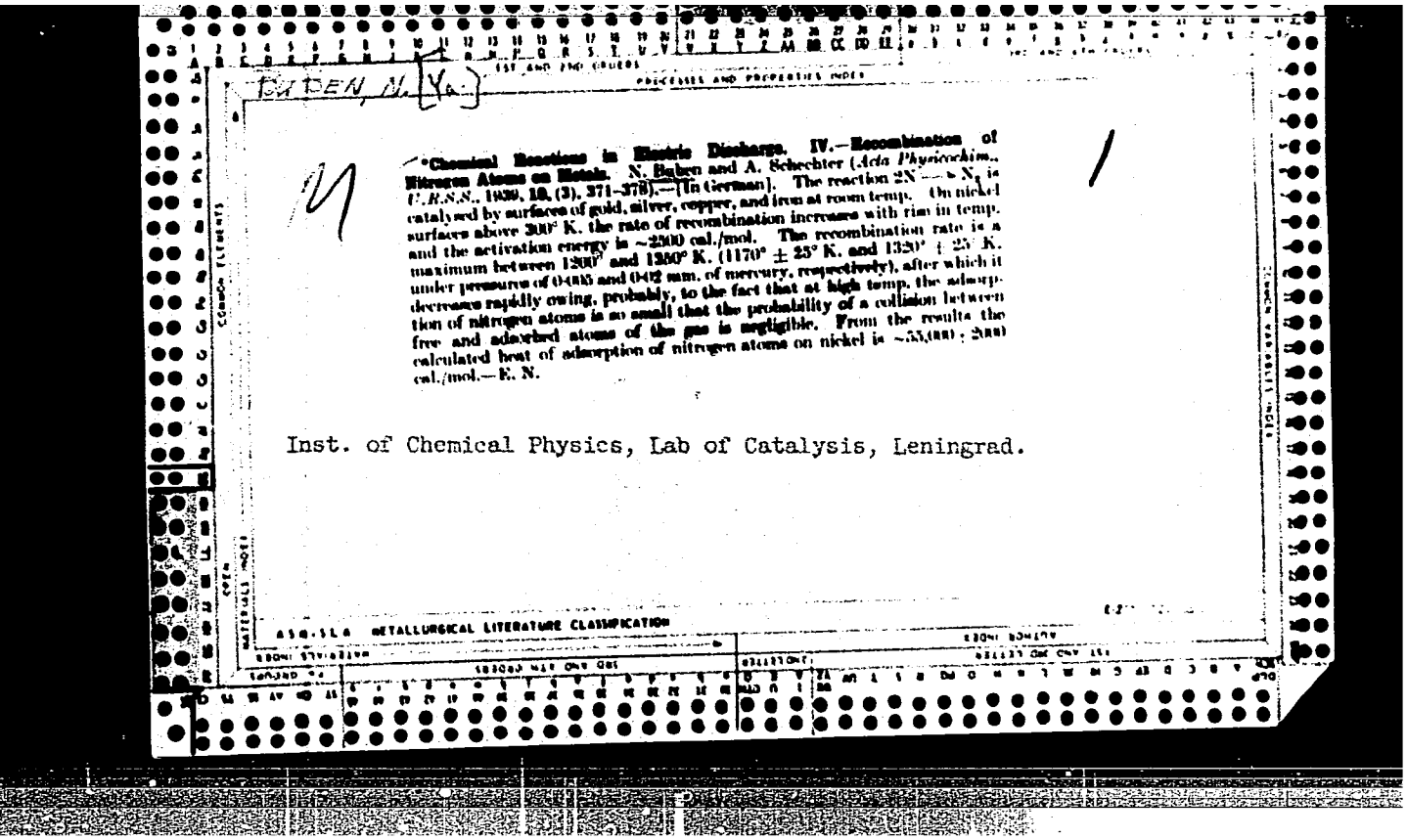
TEXT: Measurements of the propagational velocity of seismoacoustic waves in a coal seam by means of an electron chronograph gives an unpermissible spread, related to the character of the disturbances spreading through the rock. A simple three-channel transistor magnetophone was built for investigations in a complex locality. The recording of artificial and natural disturbances, which confirmed the principles of the equipment's applicability, was made in a shaft. The checking of the equipment's prolonged stability in the daily measurements is being carried out by technicians of the Gottwald II shaft in Czechoslovakia./Abstracter's note: Complete translation./

Card 1/1

CERNY, M; BUBEN, I.; PACAK, J.

Syntheses with anhydro sugars. Pt.3. Coll Cz Chem 28 no.6: 1569-1578 Je '63.

1. Institut fur organische Chemie, Karlsuniversitat, Prag.



BODEN, N. [Ya.]

***Chemical Reactions in Electric Discharge. IV.—Recombination of Nitrogen Atoms on Metals.** N. Boden and A. Schechter (*Acta Physicochim. U.R.S.S.*, 1939, **10**, (3), 371–378).—[In German]. The reaction $2N \longrightarrow N_2$ is catalysed by surfaces of gold, silver, copper, and iron at room temp. On nickel surfaces above 300° K. the rate of recombination increases with rise in temp. and the activation energy is ~2300 cal./mol. The recombination rate is a maximum between 1200° and 1250° K. (1170° ± 25° K. and 1320° ± 25° K. under pressures of 0·035 and 0·02 mm. of mercury, respectively), after which it decreases rapidly owing, probably, to the fact that at high temp. the adsorption of nitrogen atoms is so small that the probability of a collision between free and adsorbed atoms of the gas is negligible. From the results the calculated heat of adsorption of nitrogen atoms on nickel is ~55,000 ± 2000 cal./mol.—E. N.

Inst. of Chemical Physics, Lab of Catalysis, Leningrad.

A56-5L6 METALLURGICAL LITERATURE CLASSIFICATION

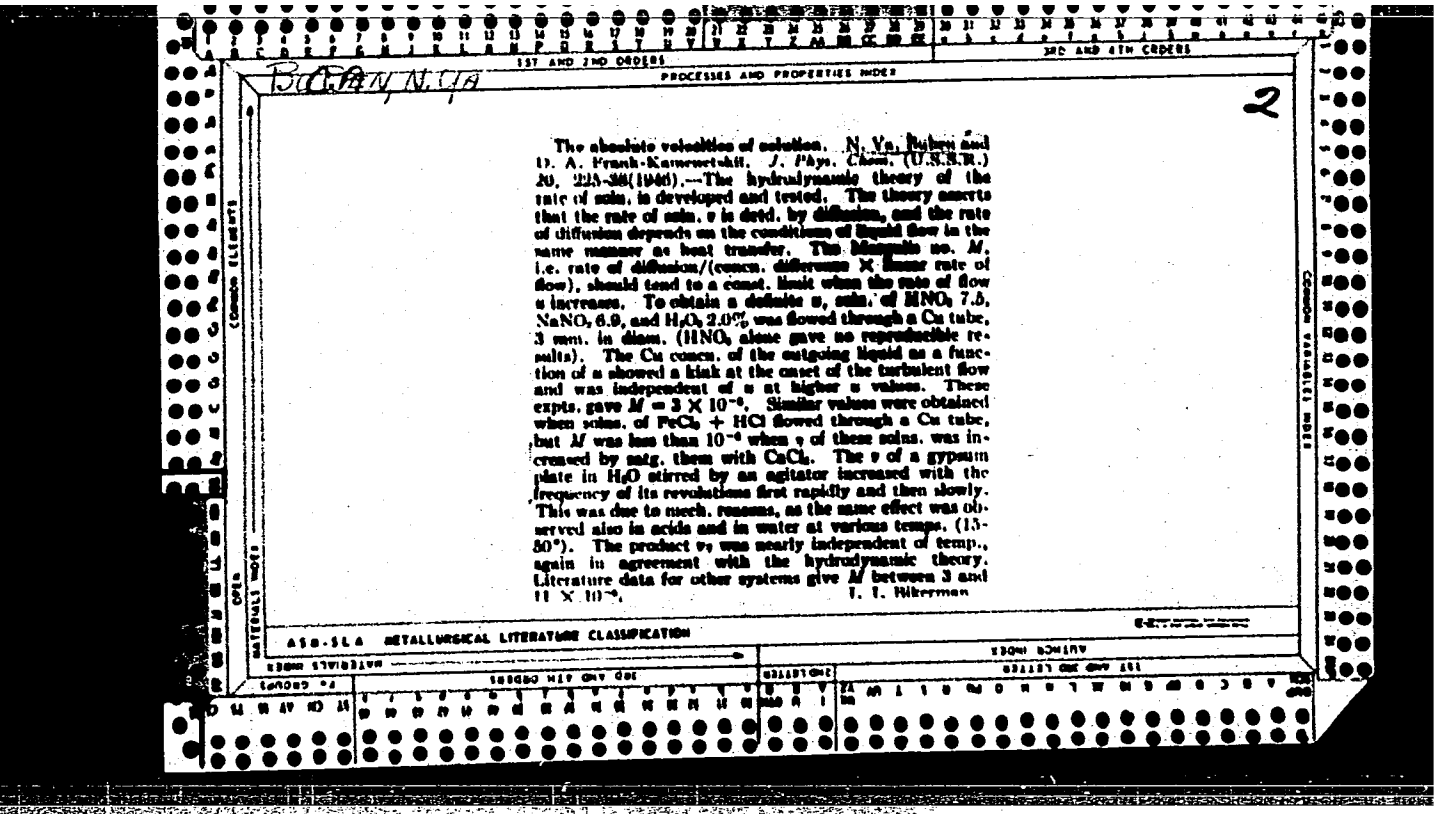
RUBEN, N. Ya.

2

6635 AEC-tr-2904

A METHOD OF DETERMINING THE KINETIC CHARACTERISTICS OF AN EXOTHERMIC HETEROGENEOUS REACTION. N. Ya. Ruben. Translated from Zhur. Fiz. Khim. 13, 230-2(1939). 6p.

Calculations are presented of the region of critical temperatures and the kinetic characteristics for a heterogeneous reaction of arbitrary order and energy of activation. (W.L.H.)



PROCESSES AND PROPERTIES INDEX

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The absolute velocities of solution. N. Ya. Buben and D. A. Frank-Kamenetskii. *J. Phys. Chem. (U.S.S.R.)* 20, 225-36(1946).—The hydrodynamic theory of the rate of soln. is developed and tested. The theory asserts that the rate of soln., v is detd. by diffusion, and the rate of diffusion depends on the conditions of liquid flow in the same manner as heat transfer. The Margulis no. M, i.e. rate of diffusion/(concn. difference × linear rate of flow), should tend to a const. limit when the rate of flow u increases. To obtain a definite u, soln. of HNO_3 7.5, $NaNO_3$ 6.9, and H_2O_2 2.0% was flowed through a Cu tube, 3 mm. in diam. (HNO_3 alone gave no reproducible results). The Cu concn. of the outgoing liquid as a function of u showed a kink at the onset of the turbulent flow and was independent of u at higher u values. These expts. gave $M = 3 \times 10^{-5}$. Similar values were obtained when solns. of $FeCl_3$ + HCl flowed through a Cu tube, but M was less than 10^{-6} when v of these solns. was increased by satg. them with $CaCl_2$. The v of a gypsum plate in H_2O stirred by an agitator increased with the frequency of its revolutions first rapidly and then slowly. This was due to mech. reasons, as the same effect was observed also in acids and in water at various temps. (15-80°). The product v_0 was nearly independent of temp., again in agreement with the hydrodynamic theory. Literature data for other systems give M between 3 and 11×10^{-5}. I. I. Bitterman

BUBEN, N. YA., VOYEVODSKIY, V. V., SOKOLOV, N. D.

Kondrat'yev, Victor Nikolayevich, 1900-

Scientific activities of V. N. Kondrat'yev. Usp. khim. 21 no. 8, 1952.

9. Monthly List of Russian Accessions, Library of Congress, November 1953/2 Uncl.

5(4)

AUTHORS: Molin, Yu. N., Koritskiy, A. T., Buben, N. Ya., Voyevodskiy, V.V., Corresponding Member, Academy of Sciences, USSR

SOV/20-123-5-31/50

TITLE: The Investigation of Free Radicals Formed in Solid Bodies in the Process of Irradiation by Fast Electrons (Issledovaniye svobodnykh radikalov, obrazuyushchikhsya v tverdykh telakh v protsesse oblucheniya bystrymi elektronami)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 123, Nr 5, pp 882-883 (USSR)

ABSTRACT: The authors endeavored to detect radicals of short life-times in solid bodies formed by fast electrons. The present paper gives data concerning radicals of life-times of some minutes. The authors constructed an apparatus for the immediate recording of the spectrum of the paramagnetic electron resonance during the irradiation of the investigated specimen. Preparation of the samples is discussed in short. The experiments were carried out at room temperature. The authors observed a signal of paramagnetic electron resonance during the irradiation of the specimen and after the interruption of the irradiation. More than 20 various substances were investigated, namely polymers (polyethylene, nylon, caprone, polymethyl

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The Investigation of Free Radicals Formed in Solid Bodies in the Process of Irradiation by Fast Electrons

metacrylate, teflon, and various specimens of rubber), solid organic acids and their salts (oxalic acid and their salts, succinic acid and their sodium salt, stearic acid and citric acid), aromatic compounds (naphthalene, α-naphthol, β-naphthol, benzoyl peroxide, metol). In all the investigated samples, the concentration of the radicals reached saturation at doses of some dozens of megarad. In the case of the majority of the investigated substances, the produced radicals were rather stable, their life-time amounted to some hours(in some cases also to longer periods). Some details are given in short. During the irradiation of polyethylene, the authors could record the radical $-CH_2-\dot{C}H-CH_2-$ which is not stable at room temperature. The spectrum of this radical is shown in a figure. According to measurements at temperatures below room temperature, the rate of conversion of the primary radical into the second one decreases with a decrease of temperature. There are 1 figure and 1 Soviet reference.

The Investigation of Free Radicals Formed in Solid Bodies in the Process of Irradiation by Fast Electrons

SOV/20-123-5-31/50

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences, USSR)

SUBMITTED: August 11, 1958

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KORITSKIY, A.T.; MOLIN, Yu.N.; SHAMSHEV, V.N.; BUBEN, N.Ya.; VOYEVODSKIY, V.V.

Study of radicals by means of electronic paramagnetic resonance during the irradiation of polyethylene by fast electrons. Vysokom.soed. 1 no.8:1182-1193 Ag '59. (MIRA 13:2)

1. Institut khimicheskoy fiziki AN SSSR.
(Polyethylene) (Radicals(Chemitry))

24(7), 5(3) SOV/51-6-6-18/34

AUTHORS: Buben, N.Ya., Voyevodskiy, V.V., Koritskiy, A.T., Molin, Yu.N., Chkheidze, I.I. and Shamshev, V.N.

TITLE: Electron paramagnetic Resonance Studies of Free Radicals Formed by Irradiation with Fast Electrons (Issledovaniye metodom elektronnogo naramagnitnogo rezonansa svobodnykh radikalov, obrazuyushchikhsya v protsesse obluchcniya bystrymi elektronami)

PERIODICAL: Optika i spektroskopiya, 1959, Vol 6, Nr 6, pp 806-807 (USSR)

ABSTRACT: An electron paramagnetic resonance (e.p.r.) spectrometer with high-frequency modulation of magnetic field working at 9400 Mc/s was used to measure the effects of fast-electron irradiation in situ. The samples irradiated were kept at temperatures from -180 to +150°C and the radiation dose reached 10^6- 10^7 rad/sec. At room temperature radicals produced in various polymers, solid organic acids and their salts and in some aromatic compounds were found to be stable (their lifetime was of the order of several hours and sometimes longer). At low temperatures e.p.r. resonance showed the presence of atomic hydrogen in irradiated aqueous solutions of sulphuric acids and some of its salts. Irradiation at low temperatures and subsequent warming up produced changes in the e.p.r. spectra which could be either reversible (caprone) or

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irreversible (dicarboxylic acids, polyformaldehyde). Such studies were made on radicals produced by electron irradiation in oxalic acid, polyethylene and paraffin. In oxalic acid the e.p.r. signal is a single line whose width is due to interaction between an unpaired electron and magnetic moments of protons. The observed e.p.r. spectrum of oxalic acid is not related to the presence of water of crystallization but it is due to radicals of the type

$$R - C \begin{smallmatrix} \nearrow O \\ \searrow O \end{smallmatrix} ,$$

formed by removal of the hydrogen atom from the carboxyl group. E.p.r. studies showed that radicals formed by electron irradiation of oxalic acid had disappeared at the rate given by $dn/dt = -Kn^2$ (at 25°C $K = 10^{-21}$ cm^3/sec). The presence of water of crystallization affects strongly the rate of disappearance of these radicals: the value of K in anhydrous acid is higher than in the hydrated compound. Irradiation of polyethylene at room temperature produces CH_2--CH--CH_2 radicals which are stable at low temperatures. Changes in the e.p.r. spectrum of

Electron Paramagnetic Resonance Studies of Free Radicals Formed by Irradiation with Fast Electrons

irratiated polyethylene show that the initially produced radical transforms into a secondary radical which is more stable; the rate of this conversion decreases with decrease of temperature. The e.p.r. spectrum of paraffin showed that the original radical is the same as that in polyethylene, i.e. it is due to removal of the hydrogen atom from one of the methylene groups, but the lifetimes of the original radicals in polyethylene and in paraffin are different. There are 3 Soviet references.

5(4)

AUTHORS: Molin, Yu. N., Koritskiy, A. T., SOV/20-124-1-35/69
Buben, N. Ya., Voyevodskiy, V. V., Corresponding Member, AS USSR

TITLE: Investigation by the Method of Paramagnetic Electron Resonance of Free Radicals Formed During Irradiation of Oxalic Acid (Issledovaniye metodom elektronnogo paramagnitnogo rezonansa svobodnykh radikalov, obrazuyushchikhsya pri obluchenii shchavelevoy kisloty)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 1, pp 127-128 (USSR)

ABSTRACT: The procedure developed by the authors for the purpose of observing free radicals by the method of paramagnetic electron resonance in connection with the action of fast electrons on matter also permits the investigation of the creation and annihilation of radicals in solids. The present paper contains preliminary data concering the properties of radicals formed by the irradiation of oxalic acid with 1.6 Mev electrons. The signal of paramagnetic absorption in oxalic acid consists of a single line having a width of about 4.5 Oe. The corresponding g-factor is similar to that of diphenyl-picryl hydrazyl (2.0036).

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Investigation by the Method of Paramagnetic Electron Resonance of Free Radicals Formed During Irradiation of Oxalic Acid

SOV/20-124-1-35/69

After irradiation has been discontinued, signal intensity decreases at a rate that depends on temperature. A diagram shows one of the curves for the variation of radical concentration, which was plotted at room temperature. In the temperature interval of $+10^{\circ}$ to $+40^{\circ}$ the recombination of radicals is described by the equation $dn/dt = -kn^2$, where n denotes the concentration of the radical and k a temperature-dependent constant. At $+25^{\circ}$ the value $k \simeq 9.10^{-22} cm^3/sec$ was found by employing the usual methods. According to the quadratic law of recombination it would be expected that, at constant temperature, the steady concentration of radicals after saturation is proportional to the square root of the efficiency per dose of irradiation. A table contains data on the dependence of the steady concentration of the radical on the density of the electron flux. Accumulation of radicals is, however, not described by a simple kinetic equation $dn/dt = w_o - kn^2$, but it is of complicated character. For the purpose of determining the nature of the radical in oxalic

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Investigation by the Method of Paramagnetic Electron Resonance of Free Radicals Formed During Irradiation of Oxalic Acid

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acid, the authors compared the spectra of the paramagnetic resonance of irradiated oxalic acid, succinic acid, and stearic acid as well as of some of their salts. The following was found: also in the rather complicated spectra of succinic acid and stearic acid signals of paramagnetic resonance occur which are analogous to the signal in oxalic acid. In the spectra of the salts, such signals are either of only weak intensity or they lack entirely. The experimentally determined law of quadratic recombination is indicative of the fact that the radicals are destroyed by the interaction of two radicals. Either the diffusion of a radical in matter by the transition of a hydrogen atom from the neighboring molecule to the radical, or dislocation of a free electron according to the system of conjugate hydrogen bonds may be considered as possible mechanisms. Further investigations are necessary for the purpose of determining the true mechanism. There are 2 figures, 1 table, and 2 Soviet references.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute for Chemical Physics of the Academy of Sciences, USSR)

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SUBMITTED: August 11, 1958

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AUTHORS: Molin, Yu. N., Sharpatyy, V. A., Buben, N. Ya. SOV/20-128-6-36/63

TITLE: The Electron Paramagnetic Resonance Spectra and Kinetics of Accumulation of Radical Products Forming When Frozen Aqueous Solutions of Sodium Nitrate Are Bombarded With Fast Electrons

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 128, Nr 6, pp 1224 - 1227 (USSR)

ABSTRACT: By means of the apparatus described in reference 7 for the investigation of spectra of electron paramagnetic resonance (epr) the epr + spectra of frozen aqueous solutions of $NaNO_3$ were photographed at -145°C (Fig 1). The characteristics of the spectra of radicals I - IV are given in table 1. Radical I is identified as NO_2, radical II as the ion HNO_3^-. Radical III was observed in acid medium, radical IV in alkaline medium only. These two radicals are called nitrogen-free peroxide radicals, but they have not yet been clearly identified. Figure 2 shows the radical yield G_R as a function of the concentration of $NaNO_3$. It indicates that the reaction mechanism is not affected by the

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The Electron Paramagnetic Resonance Spectra and Kinetics of Accumulation of Radical Products Forming When Frozen Aqueous Solutions of Sodium Nitrate Are Bombarded With Fast Electrons

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concentration and that the indirect effect of the irradiation prevails in it. This is also confirmed by the difference between the epr spectrum of solid $NaNO_3$ and that of its solution. In order to clarify the role of the radicals in the formation of NO_2^- the yields G_R and $G_{NO_2^-}$ are compared with each other in table 2. The striking sensibilizing effect of the alkaline medium which can be found in this comparison needs further detailed investigation. The authors thank V. N. Shamshev and A. T. Koritskiy for their cooperation in the experiments, and V. V. Voyevodskiy, Corresponding Member of the AS USSR, Professor M. A. Proskurnin and V. D. Orekhov for valuable advice. There are 2 figures, 2 tables, and 18 references, 8 of which are Soviet.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemicophysics of the Academy of Sciences, USSR). Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L. Ya. Karpova (Scientific Research Institute of Physical Chemistry imeni L. Ya. Karpov)

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SOV/20-129-6-41/69

AUTHORS: Slovokhotova, N. A., Koritskiy, A. T., Buben, N. Ya.

TITLE: Double Bonds in Polyethylene Irradiated by Fast Electrons

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 6, pp 1347-1348 (USSR)

ABSTRACT: Polyethylene was irradiated in liquid nitrogen with 23-300 Mrad and the infrared spectrum was recorded at various temperatures (Fig 1). Immediately after irradiation, an absorption band at 966 cm^{-1} may be observed, which confirms that the double bonds of the transvinylene type are formed at the instant of irradiation by stripping off H-atoms in two adjoint methylene groups. The intensity of the band 909 cm^{-1} corresponding to the intensity of the vinyl group depends in a high degree on temperature and on the intensity of irradiation. This is explained by reaction of the vinyl group with free radicals formed by irradiation. Irradiation at temperatures below -100° with 206 Mrad causes the bands 985 cm^{-1} and 944 cm^{-1} to occur in the spectrum (Fig 2). The band 944 cm^{-1} vanishes again with a temperature rise and is probably caused by short-lived radicals.

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Double Bonds in Polyethylene Irradiated by Fast Electrons

The 985 cm^{-1} band is believed to be caused by conjugate double bonds. The authors thank Academician V. A. Kargin for his valuable advice. There are 2 figures and 3 references, 2 of which are Soviet.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physical and Chemical Institute imeni L. Ya. Karpov).
Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences, USSR)

SUBMITTED: July 13, 1959

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BUBEN, N. Ya

~~LATYSHEV, G. D.~~

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PHASE I BOOK EXPLOITATION SOV/5410

Tashkentskaya konferentsiya po mirnomu ispol'zovaniyu atomnoy energii. Tashkent, 1959.

Trudy (Transactions of the Tashkent Conference on the Peaceful Uses of Atomic Energy) v. 2. Tashkent, Izd-vo AN UzSSR, 1960. 449 p. Errata slip inserted. 1,500 copies printed.

Sponsoring Agency: Akademiya nauk Uzbekskoy SSR.

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Transactions of the Tashkent (Cont.) SOV/5410

Candidate of Physics and Mathematics; Ya. Kh. Turakulov, Doctor of Biological Sciences. Ed.: R. I. Khamidov; Tech. Ed.: A. G. Babakhanova.

PURPOSE : The publication is intended for scientific workers and specialists employed in enterprises where radioactive isotopes and nuclear radiation are used for research in chemical, geological, and technological fields.

COVERAGE: This collection of 133 articles represents the second volume of the Transactions of the Tashkent Conference on the Peaceful Uses of Atomic Energy. The individual articles deal with a wide range of problems in the field of nuclear radiation, including: production and chemical analysis of radioactive isotopes; investigation of the kinetics of chemical reactions by means of isotopes; application of spectral analysis for the manufacturing of radioactive preparations; radioactive methods for determining the content of elements in the rocks; and an analysis of methods for obtaining pure substances. Certain

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instruments used, such as automatic regulators, flowmeters, level gauges, and high-sensitivity gamma-relays, are described. No personalities are mentioned. References follow individual articles.

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86745

S/120/60/000/006/020/045
E032/E314

5.5800 (1043, 1229, 1273)

AUTHORS: Molin, Yu.N., Koritskiy, A.T., Semenov, A.G., Bubnov, N.Ya. and Shamshev, V.N.

TITLE: Apparatus for the Observation of E.P.R. Spectra of Solids During Their Irradiation by Fast Electrons

PERIODICAL: Pribory i tekhnika eksperimenta, 1960, No. 6, pp. 73 - 77

TEXT: The electron paramagnetic resonance method (E.P.R.) is being widely used to study the properties of radicals in materials subject to ionising radiation. Usually, such studies are carried out in two stages. In the first stage, the sample is irradiated and in the second the E.P.R. spectrum is recorded. This method is not always convenient because it cannot be used to determine short-period processes taking place in the specimen. In order to remove this disadvantage the present authors have designed an apparatus in which the specimen can be irradiated in situ in the E.P.R. spectrometer. The E.P.R. spectrometer, employing a high-frequency modulation of the magnetic field and working on a wavelength of about 3.2 cm, was described in detail by Semenov and Bubnov in Ref. 5. The

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Apparatus for the Observation of E.P.R. Spectra of Solids During Their Irradiation by Fast Electrons

absorbing cell in the spectrometer is in the form of an H_{012} rectangular resonator with a Q-factor of about 1 000. The source of the ionising radiation was the electron accelerator of the Institute of Chemical Physics of the AS USSR, which gives electrons of up to 2 MeV in energy. Fig. 1 shows the method of introducing the electron beam into the resonator of the spectrometer. The electrons are introduced through a cylindrical channel in one of the pole pieces of the magnet so that they enter along the lines of force. The presence of the channel, whose diameter on the pole-piece face is 6 mm, leads to a deterioration in the uniformity of the magnetic field. The nonuniformity at the specimen was found to be 0.8 Oe/cm in the direction of the axis of the channel but very small in the perpendicular direction. Since usually the E.P.R. line width in solids is of the order of 10 Oe, such a nonuniformity does not reduce the resolution of the spectrometer when the thickness of the specimen is of the

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